REMARKS

Applicant notes with appreciation the telephone interview courteously afforded the undersigned counsel for the Applicant on March 10, 2004. The above amendment to claim 1 was proposed at the interview, and arguments were presented as to why claim 1, even without the inclusion of the claim element of a cooling device component, is not disclosed or suggested in the Sellers et al. reference. In the interview the Examiner agreed, subject to obtaining the approval of her supervisor, that such an amendment would not raise new issues requiring further searching or consideration, since the amendment deletes an element from claim 1, rather than adding anything thereto. The Examiner reserved making a judgment as to the allowability of the claims amended in this form until reviewing Applicant's written response.

In view of the removal of the "cooling device component" from independent claim 1, this claim element has been included in claim 3 to provide proper antecedent basis. Claim 3 also provides the necessary structural interrelationship between the cooling device component and the electrical conductor, by stating that the cooling device component cools a second section of the electrical conductor.

In the Office Action dated December 30, 2003, claims 1-8, 10 and 13 were rejected under 35 U.S.C. §102(e) as being anticipated by Sellers et al. In the interview, the undersigned counsel stated that claim 1 had been specifically amended in the Amendment accompanying the filing of the RCE to require a non-resinous heat insulator disposed between at least one section of the conductor and the carrier structure. In the interview, counsel stated that the December 30, 2004

Office Action did not specifically identify a component of the Sellers et al. apparatus which the Examiner considers to be such a non-resinous insulator.

In the interview, the Examiner stated the citation of the passage in Sellers et al. at column 4, lines 25-44 was intended to convey that the Examiner considers the water flowing in the cooling system disclosed in the Sellers et al. reference as being a non-resinous insulator. The Examiner stated this interpretation was justified because of the lack, in the Examiner's opinion, of a suitably claimed structural relationship between the cooling device component and the non-resinous heat insulator in the language of claim 1 as it existed at the time the final rejection was rendered. In the interview, counsel stated on behalf of the Applicant that the inclusion of a cooling device component in the subject matter of claim 1 is not essential to the operation or the patentability of the subject matter of that claim. The important feature in support of patentability is to employ a non-resinous heat insulator to avoid damage to the cast resin material that forms the carrier structure for the electrical conductor, due to the heat generated by the electrical conductor during operation thereof. As also discussed in the interview, Applicant submits that a person of ordinary skill in the art would not consider the flowing water in the Sellers et al. system as forming an "insulator" as that term is commonly understood by those of ordinary skill in the art. Moreover, the system disclosed in the Sellers et al. reference is an example of systems of the type described in the introductory portion of the present specification wherein water cooling has been demonstrated *not* to be sufficient for avoiding damage to the cast resin material in which the gradient coil conductors are held.

Applicant is using the term "insulator" in the claims of the present application in accordance with its ordinary dictionary meaning. Applicant recognizes that the Examiner is required to give all terms in a patent claim their broadest reasonable interpretation, however, this does not permit the Examiner to employ an interpretation or definition that is at odds with the definition that is commonly understood by those of ordinary skill in the relevant technology.

In support of this position, Applicant submits herewith an excerpt from the McGraw-Hill Dictionary of Scientific and Technical Terms providing definitions for "insulation" and "insulator." The term "insulation" is defined as material that retards the passage of heat and sound and an "insulator" is defined as a material that is a poor conductor of heat, sound or electricity.

The water flowing in the cooling system in the Sellers et al. reference is used to carry away heat that is generated during the operation of gradient coils. In order to perform this function, water cannot be considered to be an insulating material, since it must be capable of sufficiently absorbing (conducting) heat in order to be able to carry it away. An insulator, in the thermal context, is considered to be a material that precludes, as much as possible, the flow of heat from point A to point B. The flowing water in the Sellers et al. system unquestionably precludes the build-up of heat within the gradient coil system, but it does not prevent the *flow* of heat, and in fact preserving heat flow is essential to the intended operation of the Sellers et al. system. If any component in the Sellers et al. system prevented or reduced heat flow, this would render the cooling system ineffective, or at least much more inefficient.

This situation can be analogized to the metal fins that are commonly applied to integrated circuit components to allow dissipation of the heat generated within the integrated circuit during operation thereof to the ambient atmosphere. In order to perform their intended function, such fins usually are composed of a metal having high heat transfer capabilities, such as aluminum. No person of ordinary skill in the art would consider such fins to be an "insulator" even though they are serving the purpose of carrying away heat from the integrated circuit. An item that carries away heat can be considered to be a heat dissipater, but those of ordinary skill in the art certainly would not consider it to be a heat insulator. As noted above, most heat dissipaters are in fact composed of metal that is highly heat conductive, which is the complete opposite of an insulator.

Moreover, since the Sellers et al. reference was used as an anticipating reference this means that, under numerous Federal Circuit decisions, it must "place the invention in the hands of the public." This means that a person of ordinary skill reading the Sellers et al. reference, who has not had the benefit of reading the present disclosure, must already recognize, based on the content within the four corners of the Sellers et al. reference itself, that the flowing water is (allegedly) an "insulator." Applicant respectfully submits the only reason why the Examiner has contended that the flowing water in the Sellers et al. reference is an "insulator" is by first reading the present disclosure and claims, but this is the opposite of how patent claims must be interpreted, even with regard to the practice of giving all terms in a claim their broadest reasonable meaning.

Moreover, since the Sellers et al. reference, as described in the present specification, exhibits the very problem which the subject matter of the present

invention overcomes, it clearly does not place the invention in the hands of the public because it does not solve the problem.

Moreover, as noted in Applicant's previous response the Sellers et al. reference refers only to the cooling system having "ducts" in the resin, and does not describe any hose or conduit for conducting the water through the cast resin gradient coil carrier. Based on the language of Sellers et al., therefore, a person of ordinary skill in the art would assume that the water is simply flowing in "bare" channels in the cast resin carrier, by itself with no other components or material in those channels.

All claims of the application are therefore submitted to be in condition for allowance. Entry of the present Amendment and reconsideration of the application are respectfully requested.

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McGraw-Hill Dictionary of Scientific and Technical Terms

Fifth Edition

Sybil P. Parker
Editor in Chief

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On the cover: Photomicrograph of crystals of vitamin B_1.
(*Dennis Kunkel, University of Hawaii*)

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In addition, material has been drawn from the following references: R. E. Huschke, *Glossary of Meteorology*, American Meteorological Society, 1959; *U.S. Air Force Glossary of Standardized Terms*, AF Manual 11-1, vol. 1, 1972; *Communications-Electronics Terminology*, AF Manual 11-1, vol. 3, 1970; W. H. Allen, ed., *Dictionary of Technical Terms for Aerospace Use*, 1st ed., National Aeronautics and Space Administration, 1965; J. M. Gilliland, *Solar-Terrestrial Physics: A Glossary of Terms and Abbreviations*, Royal Aircraft Establishment Technical Report 67158, 1967; *Glossary of Air Traffic Control Terms*, Federal Aviation Agency; *A Glossary of Range Terminology, White Sands Missile Range, New Mexico*, National Bureau of Standards, AD 467-424; *A DOD Glossary of Mapping, Charting and Geodetic Terms*, 1st ed., Department of Defense, 1967; P. W. Thrush, comp. and ed., *A Dictionary of Mining, Mineral, and Related Terms*. Bureau of Mines, 1968; *Nuclear Terms: A Glossary*, 2d ed., Atomic Energy Commission; F. Casey, ed., *Compilation of Terms in Information Sciences Technology*, Federal Council for Science and Technology, 1970; *Glossary of Stinfo Terminology*, Office of Aerospace Research, U.S. Air Force, 1963; *Naval Dictionary of Electronic, Technical, and Imperative Terms*, Bureau of Naval Personnel, 1962; *ADP Glossary*, Department of the Navy, NAVSO P-3097.

McGRAW-HILL DICTIONARY OF SCIENTIFIC AND TECHNICAL TERMS, Fifth Edition

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erties, often made with asbestos fibers and in the form of blocks, corrugated slabs, or sheathing. { 'in·sə,lād·iŋ ;kāŋ,krēt }

insulating oil [MATER] A chlorinated hydrocarbon, such as trichlorobenzene, mixed with fluorinated hydrocarbons, whose high dielectric strength and high flash point allow it to be used in switches, circuit breakers, and transformers as an insulator and cooling medium. Also known as electrical oil. { 'in·sə,lād·iŋ ,ȯil }

insulating paper [MATER] A standard material for insulating electrical equipment, usually consisting of bond or kraft paper coated with black or yellow insulating varnish on both sides. Also known as electrical insulating paper; varnish paper. { 'in·sə,lād·iŋ ,pā·pər }

insulating strength [ELEC] Measure of the ability of an insulating material to withstand electric stress without breakdown; it is defined as the voltage per unit thickness necessary to initiate a disruptive discharge; usually measured in volts per centimeter. { 'in·sə,lād·iŋ ,strenkth }

insulating tape [MATER] Tape impregnated with insulating material, and usually adhesive; used to cover joints in insulated wires or cables. Also known as electrical tape. { 'in·sə,lād·iŋ ,tāp }

insulation [BUILD] Material used in walls, ceilings, and floors to retard the passage of heat and sound. [ELEC] A material having high electrical resistivity and therefore suitable for separating adjacent conductors in an electric circuit or preventing possible future contact between conductors. Also known as electrical insulation. { ,in·sə'lā·shən }

insulation coordination [ELEC] Steps taken to ensure that electric equipment is not damaged by overvoltages and that flashovers are localized in regions where no damage results from them. { ,in·sə'lā·shən kō'ȯrd·ən,ā·shən }

insulation porcelain [MATER] Any of the various insulating materials consisting of molded silica, molded steatite, or specially compounded ceramics, often containing zirconia or beryllia. Also known as electrical porcelain. { ,in·sə'lā·shən ;pȯr·slən }

insulation protection [ELEC] Use of devices to protect insulators of power transmission lines from damage by heavy arcs. { ,in·sə'lā·shən prə;tek·shən }

insulation resistance [ELEC] The electrical resistance between two conductors separated by an insulating material. { ,in·sə'lā·shən ri;zis·təns }

insulation sampler [ENG] A device for collecting deep water which prevents any significant conduction of heat from the water sample so that it maintains its original temperature as it is hauled to the surface. { ,in·sə'lā·shən ;sam·plər }

insulation testing set [ENG] An instrument for measuring insulation resistance, consisting of a high-range ohmmeter having a hand-driven direct-current generator as its voltage source. { ,in·sə'lā·shən 'test·iŋ ,set }

insulator [ELEC] A device having high electrical resistance and used for supporting or separating conductors to prevent undesired flow of current from them to other objects. Also known as electrical insulator. [MATER] A material that is a poor conductor of heat, sound, or electricity. [SOLID STATE] A substance in which the normal energy band is full and is separated from the first excitation band by a forbidden band that can be penetrated only by an electron having an energy of several electronvolts, sufficient to disrupt the substance. { 'in·sə,lād·ər }

insulator arc-over [ELEC] Discharge of power current in the form of an arc, following a surface discharge over an insulator. { 'in·sə,lād·ər 'ärk,ō·vər }

insulator arrangement [ELECTROMAG] The placement of insulators on a transmission mast. { 'in·sə,lād·ər ə,rānj·mənt }

insulin [BIOCHEM] A protein hormone produced by the beta cells of the islets of Langerhans which participates in carbohydrate and fat metabolism. { 'in·sə·lən }

insulinase [BIOCHEM] An enzyme produced by the liver which is able to inactivate insulin. { 'in·sə·lə,nās }

insulinoma *See* islet-cell tumor. { ,in·sə·lə'nō·mə }

insulin shock [MED] Clinical manifestation of hypoglycemia due to excess amounts of insulin in the blood. { 'in·sə·lən ;shäk }

insulin shock therapy [MED] Administration of large doses of insulin to induce hypoglycemic comas, followed by administration of glucose, in the treatment of certain psychotic disorders. { 'in·sə·lən ;shäk 'ther·ə·pē }

insuloma *See* islet-cell tumor. { ,in·sə'lō·mə }

intaglio [LAP] A type of carved gemstone in which the figure is engraved on the surface of the stone rather than left in relief by cutting away the background, as in a cameo. { in'tal·yō }

intaglio plate [GRAPHICS] A metal surface into which the printing elements are formed in intaglio printing. { in'tal·yō ,plāt }

intaglio printing [GRAPHICS] A printing method in which the printing elements are all below the plate surface, having been cut, scratched, engraved, or etched into the metal to form ink-retaining grooves or cups; surplus ink on the surface must be wiped or scraped off after each inking and before each printing impression. { in'tal·yō 'print·iŋ }

intake [ENG] 1. An entrance for air, water, fuel, or other fluid or the amount of such fluid taken in. 2. A main passage for air in a mine. [HYD] *See* recharge. { 'in,tāk }

intake area *See* recharge area. { 'in,tāk ,er·ē·ə }

intake chamber [CIV ENG] A large chamber that gradually narrows to an intake tunnel; designed to avoid undesirable water currents. { 'in,tāk ,chām·bər }

intake gate [CIV ENG] A movable partition for opening or closing a water intake opening. { 'in,tāk ,gāt }

intake manifold [MECH ENG] A system of pipes which feeds fuel to the various cylinders of a multicylinder internal combustion engine. { 'in,tāk ,man·ə,fōld }

intake stroke [MECH ENG] The fluid admission phase or travel of a reciprocating piston and cylinder mechanism as, for example, in an engine, pump, or compressor. { 'in,tāk ,strōk }

intake valve [MECH ENG] The valve which opens to allow air or an air-fuel mixture to enter an engine cylinder. { 'in,tā ,valv }

intarsia [GRAPHICS] Decorative designs of inlaid wood in a background of wood; often used in furniture making. Also known as tarsia. [TEXT] A pattern in several colors, usually geometrical, in a knitted fabric in which both sides of the fabric are alike. { in'tär·sē·ə }

integer [MATH] Any positive or negative counting number or zero. { 'int·ə·jər }

integer constant [COMPUT SCI] A constant that uses the values 0, 1, ..., 9 with no decimal point in FORTRAN. { 'int·əjər ;kän·stənt }

integer data type [COMPUT SCI] A scalar data type which is used to represent whole numbers, that is, values without fractional parts. { 'int·ə·jər 'dad·ə ,tīp }

integer partition [MATH] For a positive integer n, a nonincreasing sequence of positive integers whose sum equals n. { 'int·ə·jər pär'tish·ən }

integer programming [SYS ENG] A series of procedures used in operations research to find maxima or minima of a function subject to one or more constraints, including one which requires that the values of some or all of the variables be whole numbers. { 'int·ə·jər 'prō,gram·iŋ }

integer spin [QUANT MECH] Property of a particle whose spin angular momentum is a whole number times Planck's constant divided by 2π; bosons have this property; in contrast, fermions have half-integer spin. { 'int·ə·jər ,spin }

integer variable [COMPUT SCI] A variable in FORTRAN whose first character is normally I, J, K, L, M, or N. { 'int·ə·jər 'ver·ē·ə·bəl }

integral [MATH] 1. A solution of a differential equation; sometimes called an integral of the equation. 2. An element of a ring B is said to be integral over a ring A contained in B if it is the root of a polynomial with coefficients in A and with leading coefficient 1. 3. *See* definite Riemann integral; indefinite integral. { 'int·ə·grəl }

integral absorbed dose *See* integral dose. { 'int·ə·grəl əb;sȯrbd 'dōs }

integral action [CONT SYS] A control action in which the rate of change of the correcting force is proportional to the deviation. { 'int·ə·grəl ,ak·shən }

integral calculus [MATH] The study of integration and its applications to finding areas, volumes, or solutions of differential equations. { 'int·ə·grəl 'kal·kyə·ləs }

integral closure [MATH] The integral closure of a subring of a ring B is the set of all elements in B that are integral over A. { 'int·ə·grəl 'klō·zhər }

integral compensation [CONT SYS] Use of a compensator whose output changes at a rate proportional to its input. { 'int·ə·grəl ,käm·pən'sā·shən }

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